CLAIMS

1. A method for inducing an antigen-specific immune response, comprising:

administering to a subject an oligonucleotide, having a sequence including at least the following formula:

$$5' X_1CGX_2 3'$$

wherein the oligonucleotide includes at least 8 nucleotides wherein C and G are unmethylated and wherein X_1 and X_2 are nucleotides,

exposing the subject to an antigen at least 3 days after the oligonucleotide is administered to the subject to produce an antigen-specific immune response.

2. The method of claim 1, wherein the antigen is administered at least 4 days after the oligonucleotide is administered to the subject.

3. The method of claim 1, wherein the antigen is administered at least 7 days after the oligonucleotide is administered to the subject.

4. The method of claim 1, wherein the antigen is administered at least 15 days after the oligonucleotide is administered to the subject.

5. The method of claim 1, wherein the antigen is administered at least 30 days after the oligonucleotide is administered to the subject.

6. The method of claim 1, wherein the oligonucleotide is 8 to 100 nucleotides in length.

7. The method of claim 1, wherein the oligonucleotide includes a phosphate backbone modification which is a phosphorothioate or phosphorodithioate modification.

8. The method of claim 7, wherein the phosphate backbone modification occurs at the 5' end of the oligonucleotide.

9. The method of claim 7, wherein the phosphate backbone modification occurs at the 3'

end of the oligonucleotide.

10. The method of claim 1, wherein the oligonucleotide has a sequence including at least the following formula:

$$5' X_1X_2CGX_3X_4 3'$$

wherein X_1X_2 are nucleotides selected from the group consisting of: GpT, GpG, GpA and ApA; and X_3X_4 are nucleotides selected from the group consisting of: TpT, CpT or GpT.

11. The method of claim 1, wherein the oligonucleotide has a sequence including at least the following formula:

$$5' TCNTX_1X_2CGX_3X_4 3'$$

wherein X_1, X_2, X_3, and X_4 are nucleotides, N is a nucleic acid sequence composed of from about 0-25 nucleotides.

12. The method of claim 1, wherein X_1X_2 are nucleotides selected from the group consisting of: GpT, GpG, GpA and ApA and X_3X_4 are nucleotides selected from the group consisting of: TpT, CpT or GpT.

13. The method of claim 1, wherein the antigen is a nucleic acid encoding an antigen.

14. The method of claim 1, wherein the antigen is selected from the group consisting of cells, cell extracts, proteins, polysaccharides, polysaccharide conjugates, lipids, glycolipids, carbohydrate, viral extracts, viruses, bacteria, fungi, parasites, and allergens.

15. The method of claim 1, wherein the antigen is an allergen.

16. The method of claim 1, wherein the antigen is derived from an infectious organism selected from the group consisting of infectious bacteria, infectious viruses, and infectious fungi.

17. The method of claim 1, wherein the subject is actively exposed to the antigen.

18. The method of claim 17, wherein the antigen is delivered in conjunction with a colloidal dispersion system.

19. The method of claim 18, wherein the colloidal dispersion system is selected from the group consisting of macromolecular complexes, nanocapsules, microspheres, beads, and lipid-based systems.

20. The method of claim 19, wherein the lipid-based system is selected from the group consisting of oil-in-water emulsions, micelles, mixed micelles, and liposomes.

21. The method of claim 17, further comprising the step of administering an adjuvant in conjunction with the antigen.

22. The method of claim 1, wherein the subject is passively exposed to the antigen.

23. The method of claim 22, wherein the subject is a subject at risk of developing cancer.

24. The method of claim 22, wherein the subject is at risk of developing an allergic reaction.

25. The method of claim 22, wherein the subject is an asthmatic.

26. The method of claim 1, wherein the antigen specific immune responses is a Th1 type immune response.

27. A method for increasing platelet counts in a subject having thrombocytopenia, comprising:

administering to a subject having (non-chemotherapeutic induced) thrombocytopenia an oligonucleotide, having a sequence including at least the following formula:

$$5' X_1CGX_2 3'$$

wherein the oligonucleotide includes at least 8 nucleotides wherein C and G are unmethylated and wherein X_1 and X_2 are nucleotides, in an amount effective to increase platelet counts in the subject.

28. The method of claim 27 wherein the oligonucleotide is administered in an amount effective to increase platelet counts in the subject by at least 10,000 platelets per microliter.

29. The method of claim 27 wherein the oligonucleotide is administered in an amount effective to increase platelet counts in the subject by at least 20,000 platelets per microliter.

30. The method of claim 27 wherein the oligonucleotide is administered to the subject in an amount effective to increase the platelet counts in the subject by 100 percent.

31. The method of claim 27 wherein the thrombocytopenia is a drug-induced thrombocytopenia.

32. The method of claim 27 wherein the thrombocytopenia is due to an autoimmune disorder such as idiopathic thrombocytopenic purpura.

33. The method of claim 27 wherein the thrombocytopenia is a thrombocytopenia resulting from accidental radiation exposure.

34. The method of claim 27 wherein the thrombocytopenia is a thrombocytopenia resulting from therapeutic radiation exposure.

35. The method of claim 27, wherein the oligonucleotide is 8 to 100 nucleotides in length.

36. The method of claim 27, wherein the oligonucleotide includes a phosphate backbone modification which is a phosphorothioate or phosphorodithioate modification.

37. The method of claim 36, wherein the phosphate backbone modification occurs at the 5' end of the oligonucleotide.

38. The method of claim 36, wherein the phosphate backbone modification occurs at the 3' end of the oligonucleotide.

39. The method of claim 27, wherein the oligonucleotide has a sequence including at least the following formula:

5' $X_1X_2CGX_3X_4$ 3'

wherein X_1X_2 are nucleotides selected from the group consisting of: GpT, GpG, GpA and ApA; and X_3X_4 are nucleotides selected from the group consisting of: TpT, CpT or GpT.

40. The method of claim 27, wherein the oligonucleotide has a sequence including at least the following formula:

5' $TCNTX_1X_2CGX_3X_4$ 3'

wherein X_1, X_2, X_3, and X_4 are nucleotides, N is a nucleic acid sequence composed of from about 0-25 nucleotides.

41. The method of claim 27, wherein X_1X_2 are nucleotides selected from the group consisting of: GpT, GpG, GpA and ApA and X_3X_4 are nucleotides selected from the group consisting of: TpT, CpT or GpT.

42. A method of treating a subject at risk of developing thrombocytopenia comprising:

administering to a subject at risk of developing thrombocytopenia an oligonucleotide, having a sequence including at least the following formula:

5' X_1CGX_2 3'

wherein the oligonucleotide includes at least 8 nucleotides wherein C and G are unmethylated and wherein X_1 and X_2 are nucleotides, in an amount effective to prevent a decrease in platelet counts ordinarily expected under platelet-depleting conditions in the subject when the subject is exposed to platelet-depleting conditions.

43. The method of claim 42 wherein the subject at risk of developing thrombocytopenia has a disorder treated with platelet suppressive drugs.

44. The method of claim 42, wherein the oligonucleotide is 8 to 100 nucleotides in length.

45. The method of claim 42, wherein the oligonucleotide includes a phosphate backbone modification which is a phosphorothioate or phosphorodithioate modification.

46. The method of claim 45, wherein the phosphate backbone modification occurs at the 5' end of the oligonucleotide.

47. The method of claim 45, wherein the phosphate backbone modification occurs at the 3' end of the oligonucleotide.

48. The method of claim 42, wherein the oligonucleotide has a sequence including at least the following formula:

5' $X_1X_2CGX_3X_4$ 3'

wherein X_1X_2 are nucleotides selected from the group consisting of: GpT, GpG, GpA and ApA; and X_3X_4 are nucleotides selected from the group consisting of: TpT, CpT or GpT.

49. The method of claim 42, wherein the oligonucleotide has a sequence including at least the following formula:

5' $TCNTX_1X_2CGX_3X_4$ 3'

wherein X_1, X_2, X_3, and X_4 are nucleotides, N is a nucleic acid sequence composed of from about 0-25 nucleotides.

50. The method of claim 42, wherein X_1X_2 are nucleotides selected from the group consisting of: GpT, GpG, GpA and ApA and X_3X_4 are nucleotides selected from the group consisting of: TpT, CpT or GpT.

51. A method for treating anemia, comprising

administering to a subject having anemia an oligonucleotide, having a sequence including at least the following formula:

$$5' X_1CGX_2 3'$$

wherein the oligonucleotide includes at least 8 nucleotides wherein C and G are unmethylated and wherein X_1 and X_2 are nucleotides, in an amount effective to induce erythropoiesis in the subject.

52. The method of claim 51 wherein the oligonucleotide is administered in an amount effective to increase erythroblast counts in the subject by at least 10 percent.

53. The method of claim 51 wherein the oligonucleotide is administered in an amount effective to increase erythroblast counts in the subject by at least 20 percent.

54. The method of claim 51 wherein the oligonucleotide is administered to the subject in an amount effective to increase erythroblast counts in the subject by 100 percent.

55. The method of claim 51 wherein the anemia is a drug-induced anemia.

56. The method of claim 51 wherein the anemia is selected from the group consisting of an immunohemolytic disorder, genetic disorders such as hemoglobinopathy and inherited hemolytic anemia; inadequate production despite adequate iron stores; chronic disease such as kidney failure; and chronic inflammatory disorder such as rheumatoid arthritis.

57. The method of claim 51, wherein the oligonucleotide is 8 to 100 nucleotides in length.

58. The method of claim 51, wherein the oligonucleotide includes a phosphate backbone modification which is a phosphorothioate or phosphorodithioate modification.

59. The method of claim 58, wherein the phosphate backbone modification occurs at the 5' end of the oligonucleotide.

60. The method of claim 58, wherein the phosphate backbone modification occurs at the 3' end of the oligonucleotide.

61. The method of claim 51, wherein the oligonucleotide has a sequence including at least the following formula:

5' $X_1X_2CGX_3X_4$ 3'

wherein X_1X_2 are nucleotides selected from the group consisting of: GpT, GpG, GpA and ApA; and X_3X_4 are nucleotides selected from the group consisting of: TpT, CpT or GpT.

62. The method of claim 51, wherein the oligonucleotide has a sequence including at least the following formula:

5' $TCNTX_1X_2CGX_3X_4$ 3'

wherein X_1, X_2, X_3, and X_4 are nucleotides, N is a nucleic acid sequence composed of from about 0-25 nucleotides.

63. The method of claim 51, wherein X_1X_2 are nucleotides selected from the group consisting of: GpT, GpG, GpA and ApA and X_3X_4 are nucleotides selected from the group consisting of: TpT, CpT or GpT.

64. The method of claim 51 wherein the anemia is an anemia resulting from accidental radiation exposure.

65. The method of claim 51 wherein the anemia is an anemia resulting from therapeutic radiation exposure.